

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
Tetsuya SUZUKA : Attn: BOX PCT
Serial No. NEW : Docket No. 2001-1851A
Filed December 26, 2001 :

PROGRAM LIST DISPLAY DEVICE AND
VIDEO RECORDING AND PLAYBACK
DEVICE

[Corresponding to PCT/JP01/03682
Filed April 27, 2001]

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents,
Washington, DC 20231

Sir:

Prior to examination of the above-referenced U.S. patent application please amend the application as follows:

IN THE SPECIFICATION

Please amend the specification as follows:

Please replace the paragraph beginning at page 14, line 8, to line 20, with the following rewritten paragraph:

Further, according to Claim 14 of the present invention, a video recording and playback device which is installed in a broadcast receiver and records and plays back a video signal by employing storage media, comprises: a video recording state list display means for dividing a whole storage area held by the storage media into successively accessible storage units for each recorded content to perform management thereof and displaying information concerning the storage units as a video recording state list on a display screen, wherein the video recording state list display means displays a first group of storage units in which recorded programs are stored, a

second group of storage units which is allocated to programs reserved for video recording, and a third group of storage units which is unused on a single screen.

Please replace the paragraph beginning at page 15, line 14, to page 16, line 1, with the following rewritten paragraph:

Further, according to Claim 16 of the present invention, in the video recording and playback device of Claim 15, the video recording state list display means list-displays information of the storage units for the respective storage media on the video recording state list and also displays program information of the corresponding program with respect to storage units which belong to the first group or the second group, and the program information comprises one or more program attributes of the channel attribute which shows the channel of the program, the date and hour attribute which shows broadcast date and hour of the program, the program name attribute which shows the title of the program, and the category attribute which shows the category to which the program belongs.

Please replace the paragraph beginning at page 27, line 18, to page 28, line 3, with the following rewritten paragraph:

The remote control 1500 comprises a function switching button 1510 for switching an operation mode of the set top box 1000, a position indicating unit 1530 for moving a cursor on the OSD, a code input unit 1540 for inputting an ASCII code to a code input field on the OSD, a decision button 1520 for deciding an operation for the OSD, a transmission control unit 1550 which encodes a user operation, a transmitting unit 1560 which transmits the encoded user operation. The function switching button 1510 includes a display mode button 1511, a channel selection mode button 1512, and a video recording mode button 1513.

Please replace the paragraph beginning at page 41, line 14, to line 25, with the following rewritten paragraph:

The display format of the video recording OSD 570 is a table format 532 having the video recording position attribute to which the top priority is given and the device attribute to which the second highest priority is given as a default setting. In an example in figure 6, since the VHS is selected by the device-designating dialog box 555, the video recording state map 517 showing the video recording state of the respective D-VHS tapes as the storage medium name 518 on the vertical axis in the program guide display screen 500 is shown. On the video recording state map 517, a storage block mark 519 showing a program that is recorded and a position thereof is displayed for each storage medium name 518.

Please replace the paragraph beginning at page 45, line 20, to page 46, line 10, with the following rewritten paragraph:

When a preparation of the channel selection OSD is completed, the transition 2201 is performed to the state 2220 where the channel selection OSD is being displayed. In the state where the channel selection OSD is being displayed, monitoring 2221 of a program decision is carried out, and a program is decided on the basis of the user operation of the prepared channel selection OSD. The transition (2202, 2203, 2204) is performed to the state 2210 where the channel selection OSD is being prepared when the user operation or the like necessitates updating the displayed channel selection OSD. That is, when the setting of the display format setting screen (130, 230, 330, 430) is updated, when the setting of the display filter setting screen (150, 250, 350, 450) is updated, and when the screen is scrolled by the scroll bar (103, 104, 105, 106, 203, 204, 205, 206, 303, 304, 305, 306, 403, 404, 405, 406), the channel selection OSD is prepared again.

Please replace the paragraph beginning at page 55, line 5, to line 25, with the following rewritten paragraph:

When "drama 1, 3rd" is selected by the program selection cursor 414, the video recording OSD 570 in figure 6 is displayed. In figure 6, the video recording state of the tape AB-02 of the D-VHS is particularly displayed, because the set top box 1000 concludes that the tape AB-02 is

preceded as the storage medium which records "drama 1, 3rd" due to the recorded "drama 1, 1st" 507-1 and "drama 1, 2nd" 507-2 under video recording reservation on this D-VHS tape. The set top box 1000 obtains a series 4 to which the program to be recorded belongs by employing the program information model 3000 and confirms whether or not the program 1b reserved for video recording or the recorded program 1c exists in the program group that belongs to the series 4. When either of them exists, the corresponding storage medium 8 is identified, and it is taken as a candidate that is used in this video recording. Also, regarding the series group 11 and the category 6 to which the program to be recorded belongs, a candidate of the recording medium 8 is identified by a similar procedure. Each storage medium 8 that is the candidate is estimated in accordance with its goodness of fit, and, with respect to the best fitting storage medium 8, its use state is displayed on the program guide screen 500.

IN THE CLAIMS

Please amend the claims as follows:

14. (Amended) A video recording and playback device which is installed in a broadcast receiver and records and plays back a video signal by employing storage media, comprising:

a video recording state list display means for dividing a whole storage area held by the storage media into successively accessible storage units for each recorded content to perform management thereof and displaying information concerning the storage units as a video recording state list on a display screen, wherein

the video recording state list display means displays a first group of storage units in which recorded programs are stored, a second group of storage units which is allocated to programs reserved for video recording, and a third group of storage units which is unused on a single screen.

16. (Amended) The video recording and playback device of Claim 15 wherein

the video recording state list display means list-displays information of the storage units for the respective storage media on the video recording state list and also displays program information of the corresponding program with respect to storage units which belong to the first group or the second group, and

the program information comprises one or more program attributes of the channel attribute which shows the channel of the program, the date and hour attribute which shows broadcast date and hour of the program, the program name attribute which shows the title of the program, and the category attribute which shows the category to which the program belongs.

28. (Amended) The video recording and playback device of Claim 24 wherein the program list display means dynamically changes the number of the program attributes constituting the program information when the program list is displayed.

30. (Amended) The video recording and playback device of Claim 24 wherein, when the program list is displayed, the program list display means dynamically changes between a case where the title of the program is displayed as the program name attribute for the program to be displayed and a case where the program group is constituted by plural related programs and the name of the program group to which the programs belong is displayed as the program name attribute.

REMARKS

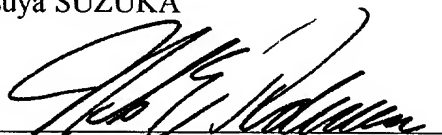
The present Preliminary Amendment is submitted to make minor editorial changes so as to generally improve the form of the specification and claims.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current Preliminary Amendment. The attached page is captioned "Version With Markings to Show Changes Made".

Respectfully submitted,

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THE COMMISSIONER IS AUTHORIZED
TO CHARGE THE FEE IN THE
CASE NO. 2001-20075

display means displays the program information as the program list in the two-dimensional array having the channel attribute and the date and hour attribute on two axes.

According to the present invention, a future broadcast schedule and a past video recording state of the programs to be recorded in reservation of a series of programs can be efficiently displayed in a single screen.

Further, according to Claim 14 of the present invention, a video recording and playback device which is installed in a broadcast receiver and records and plays back a video signal by employing storage media, comprises: a video recording state list display means for dividing a whole storage area held by the storage media into successively accessible storage units for each recorded content to perform management thereof and displaying information concerning the storage units as a video recording state list on a display screen, wherein the video recording state list display means displays a first ^{group of units} storage [unit] in which recorded programs are stored, a second ^{group of units} storage [unit] which is allocated to programs reserved for video recording, and a third ^{group of units} storage [unit] which is unused on a single screen.

According to the present invention, the user can carry out playback without consideration of a header position of a storage device even when there exists a program reserved for video recording, and further, even when there exist many storage media, the related programs can be recorded in the adjacent storage

areas in the same storage device.

Further, according to Claim 15 of the present invention, the video recording and playback device of Claim 14 comprises: a video recording reservation means for designating an arbitrary storage unit from a storage unit group displayed on the video recording state list, thereby carrying out video recording reservation of the program in the storage unit.

According to the present invention, the user can carry out playback without consideration of a header position of a storage device even when there exists a program reserved for video recording, and further, even when there exist many storage media,

related programs can be recorded in the adjacent storage as in the same storage device.

Further, according to Claim 16 of the present invention, in the video recording and playback device of Claim 15, the video recording state list display means list-displays information of the storage units for the respective storage media on the video recording state list and also displays program

information of the corresponding program with respect to [the first] storage unit and the second storage unit, and the program

information comprises one or more program attributes of the channel attribute which shows the channel of the program, the date and hour attribute which shows broadcast date and hour of the program, the program name attribute which shows the title of the program, and the category attribute which shows the

category to which the program belongs.

According to the present invention, the user can carry out playback without consideration of a header position of a storage device even when there exists a program reserved for video recording, and further, even when there exist many storage media, the related programs can be recorded in the adjacent storage areas in the same storage device.

Further, according to Claim 17 of the present invention, in the video recording and playback device of Claim 16, the video recording state list display means dynamically changes the number of the program attributes constituting the program information when the video recording state list is displayed.

According to the present invention, the user can carry out playback without consideration of a header position of a storage device even when there exists a program reserved for video recording, and further, even when there exist many storage media, the related programs can be recorded in the adjacent storage areas in the same storage device.

Further, according to Claim 18 of the present invention, in the video recording and playback device of Claim 16, when the video recording state list is displayed, the video recording state list display means dynamically changes between a case where the title of the program is displayed as the program name attribute for the program to be displayed and a case where the program group is constituted by plural related programs and the

compressed in an MPEG (Moving Picture Experts Group) method, a display unit 1060 which converts an audio/video signal into a television signal, a processor 1070 which controls the whole operation, a main memory 1080 which is the storage device for an operation of the processor 1070, an internal hard disk drive (internal HDD) 1090 which stores management information of the set top box 1000, a user input means 1100 which receives the user operation that is transmitted through the remote control 1500, an OSD circuit 1110 which prepares an On-Screen Display (OSD) for user interface such as a program guide, and a control bus 1120 which connects respective components.

The accumulation means 1400 has an external hard disk drive (external HDD) 1410 having a non-portable and random-accessible storage medium, a digital video disk recorder (DVD) 1420 having a portable and random-accessible storage medium, and a video tape recorder (D-VHS) 1430 having a portable and sequential-accessible storage medium.

The remote control 1500 comprises a function switching button 1510 for switching an operation mode of the set top box 1000, a position ^{indicating} [designating] unit 1530 for moving a cursor on the OSD, a code input unit 1540 for inputting an ASCII code to a code input field on the OSD, a decision button 1520 for deciding an operation for the OSD, a transmission control unit 1550 which encodes a user operation, a transmitting unit 1560 which transmits the encoded user operation. The function switching

button 1510 includes a display mode button 1511, a channel selection mode button 1512, and a video recording mode button 1513.

Next, a processing flow in a case where the broadcast wave is displayed on the TV monitor 1300 will be described. In a broadcast station, a video signal is MPEG-compressed for each screen and divided into 188-byte-length transport packets. When the transport packet is for a pay program, a payload unit thereof is encrypted. Thereafter, the transport packets from plural programs are multiplexed and modulated so as to be transmitted as a broadcast wave. On the broadcast wave, transport packets which store control information such as PSI (Program Specific Information) and SI (Service Information) are also multiplexed except the transport packets of the video signal. The PSI includes information for selecting a program, decryption information for removing an encryption for the pay program, and the like. Further, the SI corresponds to the electronic program guide and is guide information for programs to be broadcast.

The broadcast wave that is received by the antenna 1200 is demodulated by the tuner 1010 and converted into the transport packet. In a case where the transport packet that is inputted to the descrambler 1020 is for the pay program, the transport packet is outputted after removing the encryption; otherwise, the transport packet is outputted as it is. The TS

it is necessary to designate a storage device and a position in the device, in which the program to be recorded is to be stored, after deciding the program to be recorded. This is performed by using the video recording OSD 570 in figure 6. The program is decided in the channel selection, and thereafter the screen is automatically switched to the video recording OSD 570. The video recording OSD 570 comprises a program guide display screen 500 which displays a video recording state including program information of the programs reserved for video recording and the program information of the recorded programs, a display format setting screen 530 for indicating its display format, a display filter setting screen 550 for restricting the programs to be displayed on the program guide display screen 500.

The display format of the video recording OSD 570 is a table format 532 having the video recording position attribute to which the top priority is given and the device attribute to which the second highest priority is given as a default setting. In an example in figure 6, since the VHS is selected by the device-designating dialog box 555, the video recording state map 517 showing the video recording state of the respective D-VHS tapes as the storage medium name 518 on the vertical axis in the program guide display screen 500 is shown. On the video recording state map 517, a [recording] ^{storage} block mark 519 showing a program that is recorded and a position thereof is displayed for each storage medium name 518.

display mode state 2100, a decode control 2101 is carried out, and the tuner 1010, the descrambler 1020, the TS decoder 1040, the AV decoder 1050, and the display unit 1060 are controlled. Thereby, an image for a broadcast wave received by the antenna 1200 is displayed on the TV monitor 1300.

When the channel selection mode button 1512 is pressed in the display mode state 2100, the transition (2004) is performed to the channel selection mode state 2200. In the channel selection mode state 2200, the above-described channel selection OSD (170, 270, 370, 470) is prepared and displayed. Either of two states, that is, a state 2210 where the channel selection OSD is being prepared and a state 2220 where the channel selection OSD is being displayed is obtained in accordance with situations in which the channel selection OSD is prepared. In an initial state, the state 2210 where the channel selection OSD is being prepared is obtained, a channel selection OSD preparation 2211 is carried out, and the channel selection OSD is prepared on the basis of the program information model 3000 which will be described later.

When a preparation of the channel selection OSD is completed, the transition 2201 is performed to the state 2220 where the channel selection OSD is being displayed. In the state where the channel selection OSD is being displayed, monitoring 2221 of a program decision is carried out, and a program is decided on the basis of the user operation of the

prepared channel selection OSD. The transition (2202, 2203, 2204) is performed to the state 2210 where the channel selection OSD is being prepared when the user operation or the like necessitates updating the displayed channel selection OSD. That is, when the setting of the display format setting screen (130, 230, 330, 430) is updated, when the setting of the display filter setting screen (150, 250, 350, 450) is updated, and when the screen is scrolled by the scroll bar (103, 104, 105, 106, 203, 204, 205, 206, 303, 304, 305, 306, 403, ⁴⁰⁴104, 405, 406), the channel selection OSD is prepared again.

When the video recording mode button 1513 is pressed in the display mode state 2100 or the channel selection mode state 2200, the transition (2007, 2008) is performed to the video recording mode state 2300. In the video recording mode state 2300, the video recording OSD 570 is prepared and displayed. An operation in the video recording mode state 2300 is identical with the operation in the above-described channel selection mode 2200 except that the OSD which is prepared and displayed is the video recording OSD. Therefore, a description thereof is omitted.

Figure 8 illustrates the program information model 3000 which describes information necessary for preparing the OSD. The program information model 3000 is prepared by the received electronic program guide in an action that is carried out while the set top box shown in figure 7 is operating, i.e., the

While the program information cell 407 is displayed for each program to be displayed, only the date is displayed on the broadcast time mark 409 in a case where the broadcast time of each series is fixed.

When "drama 1, 3rd" is selected by the program selection cursor 414, the video recording OSD 570 in figure 6 is displayed. In figure 6, the video recording state of the tape AB-02 of the D-VHS is particularly displayed, because the set top box 1000 concludes that the tape AB-02 is preceded as the storage medium which records "drama 1, 3rd", due to the recorded "drama 1, 1st" 507-1 and "drama 1, 2nd" 507-2 under video recording reservation on this D-VHS tape. The set top box 1000 obtains a series 4 to which the program to be recorded belongs by employing the program information model 3000 and confirms whether or not the program 1b reserved for video recording or the recorded program 1c exists in the program group that belongs to the series 4. When either of them exists, the corresponding storage medium 8 is identified, and it is taken as a candidate that is used in this video recording. Also, regarding the series group 11 and the category 6 to which the program to be recorded belongs, a candidate of the recording medium 8 is identified by a similar procedure [similarly]. Each storage medium 8 that is the candidate is estimated in accordance with its goodness of fit, and, with respect to the best fitting storage medium 8, its use state is displayed on the program guide screen 500.

having the channel attribute and the date and hour attribute on two axes.

14. A video recording and playback device which is installed in a broadcast receiver and records and plays back a video signal by employing storage media, comprising:

a video recording state list display means for dividing a whole storage area held by the storage media into successively accessible storage units for each recorded content to perform management thereof and displaying information concerning the storage units as a video recording state list on a display screen, wherein

the video recording state list display means displays a first ^{group of} storage ^{units} [unit] in which recorded programs are stored, a second ^{group of} storage ^{units} [unit] which is allocated to programs reserved for video recording, and a third ^{group of} storage ^{units} [unit] which is unused on a single screen.

15. The video recording and playback device of Claim 14 comprising:

a video recording reservation means for designating an arbitrary storage unit from a storage unit group displayed on the video recording state list, thereby carrying out video recording reservation of the program in the storage unit.

16. The video recording and playback device of Claim 15 wherein the video recording state list display means list-displays information of the storage units for the respective storage media on the video recording state list and also displays program information of the corresponding program with respect to ^{units which belong to the first group or the second} [the first] storage unit and the second storage unit, and group

the program information comprises one or more program attributes of the channel attribute which shows the channel of the program, the date and hour attribute which shows broadcast date and hour of the program, the program name attribute which shows the title of the program, and the category attribute which shows the category to which the program belongs.

17. The video recording and playback device of Claim 16 wherein the video recording state list display means dynamically changes the number of the program attributes constituting the program information when the video recording state list is displayed.

18. The video recording and playback device of Claim 16 wherein,

when the video recording state list is displayed, the video recording state list display means dynamically changes between a case where the title of the program is displayed as the program name attribute for the program to be displayed and a case where

26. The video recording and playback device of Claim 23 wherein the program list display means dynamically switches between a case where the program list display means displays the program information as the program list in the two-dimensional array having the first program attribute arbitrarily selected from the plural program attributes on the first axis and the second program attribute arbitrarily selected from the plural program attributes on the second axis and a case where the program list display means classifies the program information into groups on the basis of the value for the first program attribute arbitrarily selected from the plural program attributes and displays the program information which belong to the respective groups as the program list in the one-dimensional array having the second program attribute arbitrarily selected from the program attribute group on the axis.

27. The video recording and playback device of Claim 23 wherein the program list display means dynamically changes the number of the program attributes constituting the program information when the program list is displayed.

28. The video recording and playback device of ^{claim 24} any of Claims 24 to 26 wherein

the program list display means dynamically changes the number of the program attributes constituting the program information when the program list is displayed.

29. The video recording and playback device of Claim 23 wherein,

when the program list is displayed, the program list display means dynamically changes between a case where the title of the program is displayed as the program name attribute for the program to be displayed and a case where the program group is constituted by plural related programs and the name of the program group to which the programs belong is displayed as the program name attribute.

30. The video recording and playback device of ^{claim 24}any of Claims 24 to 26 wherein,

when the program list is displayed, the program list display means dynamically changes between a case where the title of the program is displayed as the program name attribute for the program to be displayed and a case where the program group is constituted by plural related programs and the name of the program group to which the programs belong is displayed as the program name attribute.